

CLAIMS

1. A molded interior trim installation material for an automobile, comprising:

- an air permeable design layer that faces an interior surface of the automobile and that has a flow resistance value of less than 500Nsm^{-3} ;
- a shape-retaining felt layer that can maintain its molded shape and that has a flow resistance value of less than 500Nsm^{-3} ; and
- an porous adhesive layer that serves to adhere said air permeable design layer and said shape-retaining felt layer and that forms openings therein;

wherein said air permeable design layer, said shape-retaining felt layer, and said porous adhesive layer are laminated and are three-dimensionally formed into a shape that matches a shape of a portion of the automobile where the molded interior trim installation material is installed.

2. The molded interior trim installation material for an automobile according to Claim 1, wherein a flow resistance value of a laminate of said air permeable design layer, said shape-retaining felt layer, and said porous adhesive layer are within a range from 500 to 4000Nsm^{-3} .

3. The molded interior trim installation material for an automobile according to Claim 1 or 2, comprising:

a flat molded portion that extends along a flat portion of the interior surface of the automobile; and

a vertical wall molded portion that extends upwardly from said flat molded portion:

wherein a flow resistance value of a laminate of said air permeable design layer, said shape-retaining felt layer, and said porous adhesive layer in said vertical wall molded portion are relatively smaller than that in said flat molded portion.

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4. The molded interior trim installation material for an automobile according to any one of Claims 1 to 3, comprising:

a flat molded portion that extends along a flat portion of the interior surface of the automobile; and

10 a vertical wall molded portion that extends upwardly from said flat molded portion:

wherein a flow resistance value of a laminate of said air permeable design layer, said shape-retaining felt layer, and said porous adhesive layer in said vertical wall molded portion at a front side of the automobile are
15 relatively smaller than that in said flat molded portion.

5. The molded interior trim installation material for an automobile according to any one of Claims 1 to 4, further comprising:

a flat molded portion that extends along a flat portion of the interior
20 of the automobile; and

a vertical wall molded portion that extends upwardly from said flat molded portion:

wherein a flow resistance value of a laminate of said air permeable design layer, said shape-retaining felt layer, and said porous adhesive layer
25 in said vertical wall molded portion of a luggage compartment of the automobile are relatively smaller than that in said flat molded portion.

6. The molded interior trim installation material for an automobile according to any one of Claims 1 to 5, wherein a flow resistance value of said porous adhesive layer is within a range from 300 to 3500Nsm⁻³.

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7. The molded interior trim installation material for an automobile according to any one of Claims 1 to 6, wherein a diameter of each of said openings in said porous adhesive layer is in a range from 0.5 to 3.0 mm, and the number of said openings is in a range from 40 to 500 /100cm².

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8. The molded interior trim installation material for an automobile according to any one of Claims 1 to 7, wherein openings are formed halfway through said air permeable design layer or said shape-retaining felt layer at positions that face said openings in said porous adhesive layer.

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9. The molded interior trim installation material for an automobile according to Claim 8, wherein said opening formed halfway through said air permeable design layer or said shape-retaining felt layer is shaped into a cone that is relatively broad at an entrance side and relatively narrow at a deep side.

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10. The molded interior trim installation material for an automobile according to any one of Claims 1 to 9, wherein a spit fiber formed by extruding different kinds of resins from the same base is included in said air permeable design layer and/or said shape-retaining felt layer.

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11. A method of manufacturing a molded interior trim installation material for an automobile, comprising the steps of:

forming an air permeable design layer that faces an interior surface of the automobile and that has a flow resistance value of less than 500Nsm^{-3} ;

5 forming a shape-retaining felt layer that can maintain its molded shape and that has a flow resistance value of less than 500Nsm^{-3} ;

forming openings in a thermoplastic resin film by using a heat needle;

laminating said air permeable design layer and said shape-retaining felt layer through said thermoplastic resin film that is formed with
10 said openings and that is heated and molten; and

thermally forming a laminate of said air permeable design layer, said thermoplastic resin film, and said shape-retaining felt layer to provide a three-dimensional shape that matches a shape of a portion of the automobile
15 where the molded interior trim installation material is installed.

12. The method according to Claim 11, wherein, while said thermoplastic resin film is overlaid on one surface of said air permeable design layer or said shape-retaining felt layer, by using a machine for forming
20 an opening with many heat needles implanted on a circumference, said openings are formed from said thermoplastic resin film side to said air permeable design layer side or from said thermoplastic resin film side to said shape-retaining felt layer side so as to pass through said thermoplastic resin film and so as to pass halfway through said air permeable design layer or
25 said shape-retaining felt layer.